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ABSTRACT

The University of Minnesota Research, Development, and Demonstration Center in Education of Handicapped Children focuses on intervention strategies and materials to develop and improve communication skills of handicapped children from birth to 9 years of age. Center objectives include identification from longitudinal data of school children with inadequate communication skills. The Center's research is conducted under Program I, concerned with development and evaluation of early communication systems for handicapped children, and under Program II, concerned with improvement of handicapped children's performance through training in language skills (kindergarten and early elementary grades). Program I projects center on communication skill in Down's Syndrome children, evaluation of preschool programs to develop communication skills in deaf children, morphological development of deaf children with deaf parents, receptive language development of deaf children using rebus and sign language, identification of children with potential communication handicaps, and verbal/nonverbal help-seeking behavior in mentally retarded (MR) children. Program II projects encompass verbal elaboration and word recognition comprehension skills of young MR children, and vocabulary development improvement in reading through self instruction and efficient information processing. The Center functions as a university component guided by a director, research and policy committees who oversee facilities, the special education instructional improvement laboratory, and personnel including staff members and junior scientists. The Center has sponsored 176 dissemination and service reports and papers, as well as Ph.D. dissertations, Masters theses, and bachelor summa papers. (MC)

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University of Minnesota

Research, Development and Demonstration
Center in Education of Handicapped Children

ANNUAL REPORT

1972-1973

Donald F. Moores
Director

15 Pattee Hall
University of Minnesota
Minneapolis, Minnesota

November, 1973

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
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Foreword

Americans have long held the belief that we can design learning environments that will provide for full development of each individual. We have come a long way. We have a long way to go. The design of instructional systems to approximate this goal for those without special problems has been difficult, but not nearly as difficult as for children who must face learning tasks with handicaps. The efforts of the University of Minnesota Research, Development and Demonstration Center are dedicated to understanding the learning problems of these special children and the design of experiences that will maximize their opportunity to learn and grow.

The problems in such an undertaking are many and complex. Thus the approach to them must be varied with input of a breadth of expertise. For this reason, the Center draws upon the skills and talents of a cross-disciplinary group of scholars from across many academic departments in the University.

The needs are great. The desired outcomes of the effort are complex and difficult to achieve. They are too important to the lives of people to be based on anything but the most rigorous approaches that can be devised by the best people in the field. This has been the mode of operation of the Center over its relatively short existence. Previous reports have documented the early work. We are pleased to here present the report on the 1972-73 activities of the Center. As this report shows, the year has been one of building on earlier work and continuing to lay basic groundwork for future efforts in this vital area of adequate educational opportunity for the handicapped that must be mastered if our goal of full development of each of our citizens is ever to be attained.

Jack C. Merwin
Dean
College of Education
University of Minnesota

I. Introduction

The University of Minnesota Research, Development and Demonstration Center in Education of Handicapped Children was established in June, 1969 through the cooperation of the University of Minnesota and the Bureau of Education for the Handicapped Division of Research. The impetus for the development of a selected number of research and demonstration centers in the area of the handicapped came through the desire of the Bureau of Education for the Handicapped to encourage focused programmatic research of educational relevance on a scale large enough to have direct input in the fields of special education and child development.

A successful large scale center in education of the handicapped must have at its disposal a large number of services and qualified individuals both able and willing to organize their activities around an educationally relevant theme or set of themes. Of great importance is the presence of support services in the nature of administrative organization, measurement and research design consultants, and computer facilities. Of even greater importance is the necessity of a large group of qualified professionals on one campus whose backgrounds range from "basic" to "applied" research but who are united by interests in a common question or area. Because such individuals are usually drawn from different departments, a center should be placed in a university which has several strong departments containing individuals with a willingness to interact.

The University of Minnesota was an obvious choice for the establishment of such a center. As one of the largest universities in the nation, it has the capacity to provide the extensive support services essential for the successful functioning of a comprehensive center.

The University of Minnesota has a long history of activity and interest in exceptional children and child development. The Department of Special Education has been one of the largest and most productive, both in terms of graduate student training and research activity, in the United States. The Institute of Child Development has organized a long history of leadership in research on developmental psychology. The Department of Communication Disorders has supported research on the development of normal and deviant speech and language patterns. In addition, a large proportion of the research conducted by members of the Center for Research on Human Learning has been in the area of speech and language functioning.

Center Focus

Given the history of important contributions and commitments made by the University of Minnesota toward education of the handicapped, child development and the study of language acquisition and use, it is logical that the Minnesota Center would be organized

around the decision that it could best contribute to improving the condition of handicapped children by concentrating on the facilitation of language and communication abilities in young handicapped children.

The focus of the University of Minnesota Research, Development and Demonstration Center in Education of Handicapped Children, reflecting the above decision, is on intervention strategies and materials which develop and improve language and communication skills in handicapped and potentially handicapped children from birth to age nine.

II. Objectives

The long-term objective of the Center is to improve the language and communication abilities of handicapped children by means of identification of linguistically handicapped and potentially linguistically handicapped children, development and evaluation of intervention strategies with young handicapped children and dissemination of findings and products of benefit to young handicapped children. The general objectives of the center, which are treated in detail in the program sections, are as follows:

a. To identify children, for whom longitudinal data exist, encountering difficulty in elementary school educational settings and exhibiting inadequately developed communication skills.

b. To analyze longitudinal data on children encountering difficulty in elementary school, to isolate variables existing at the infant and preschool level predictive of later communicative and educational difficulty.

c. To identify infant and preschool children possessing characteristics predictive of later communicative and educational difficulty without early intervention.

d. To develop and evaluate receptive and expressive communication stimulation techniques and materials for handicapped infants and preschool children.

e. To validate empirically in home and educational settings techniques and materials which have been developed for handicapped infants and preschool children.

f. To develop and disseminate guidelines to facilitate allocation of handicapped children to appropriate educational techniques.

g. To describe through case studies the characteristics and environments of handicapped children who are precocious in their language development.

h. To monitor the educational progress of handicapped children receiving different infant and preschool intervention treatments on a longitudinal basis extending into the elementary school years.

i. To develop and evaluate techniques and materials for use in the teaching of pre-reading and reading skills in kindergarten and early elementary age handicapped children.

j. To validate empirically techniques and materials developed for the teaching of pre-reading and reading skills in kindergarten and early elementary age handicapped children.

k. To develop and disseminate guidelines for the allocations of handicapped children to appropriate pre-reading and reading instructional techniques.

l. To develop and evaluate techniques and materials for use in enhancing the receptive, organizational and expressive skills of handicapped kindergarten and early elementary age children.

m. To validate empirically in the classroom techniques and materials developed to enhance receptive, organizational and expressive skills in kindergarten and early elementary age handicapped children.

n. To develop and disseminate guidelines for the allocation of handicapped children to appropriate treatments for the enhancement of receptive organizational and expressive skills.

III. Programs of Research

The research of the Center is conducted within two programmatic areas. Program I is concerned with the development and evaluation of early communication intervention systems for handicapped children, and Program II has been developed to improve the academic performance of handicapped children by training in the use of language skills.

There are regularly scheduled Center meetings in which major investigators propose new activities, discuss ongoing research, and present findings prior to the reporting of final results. In addition, members of Programs I and II meet both on formal and informal bases to discuss issues, progress and questions of concern to the respective programs.

Program I

Development and Evaluation of Early Communication Systems for Handicapped Children

Principal Staff: Program Coordinator: John E. Rynders
Principal Investigators: William M. Bart
Barbara Best
William Charlesworth
Charlotte R. Clark
Margaret Horrobin
Donald F. Moores
Mildred C. Templin
Richard Woodcock

The major objective of Program One can be divided into the following four interrelated components:

1. Identification
2. Design and Development
3. Demonstration and Evaluation
4. Dissemination

The Identification component entails attention to what might be called surfacing variables, i.e., both conditions existing in the environment and characteristics of the young child which may lead to a significant communication handicap.

The Design and Development component is concerned with early education systems and strategies for handicapped children which lead to improved communication development by facilitating and capitalizing on significantly enhancing conditions in the environment and positive characteristics of the young child.

Demonstration and Evaluation efforts establish the extent to which the early education systems and strategies which have been

Down's Syndrome Project, Rynders and Horrobin

Down's Syndrome Project, Rynders and Horrobin

developed are, in reality, effective in enhancing the communication systems of young handicapped children.

Dissemination represents the crucial activities by which the results of successful intervention systems are presented to the educational community in such a way as to influence ways in which young handicapped children are served.

Program I consisted of six projects during the 1972-73 period. A short description of each project is presented below. Complete information on any project in Programs I and II may be obtained by writing the principal investigator in care of the Research, Development and Demonstration Center in Education of Handicapped Children. Reprints of any Center report are available upon request.

Project I-1. Enhancement of Communication Skill Development in Down's Syndrome Children Through Early Intervention (John Rynders and Margaret Horrobin).

This project, initiated in 1969, is assessing the effectiveness of early maternal tutoring on the development of receptive and expressive language skills in Down's Syndrome children and is developing effective curriculum materials for use with Down's children.

Results to date show superior communication and cognitive skills for children in the program, compared to a control group. The project has produced several products which will be ready for dissemination in the near future, e.g., a booklet of facts and resources for parents of newborn Down's children; an early education curriculum for parents of Down's children to use in promoting early language abilities; and an art curriculum which emphasizes communication development through art activities in a programmed format.

Project I-2. Evaluation of Effectiveness of Preschool Programs on the Development of Communication Skills in the Deaf (Donald Moores, Karen Weiss, and Lynn Goodwin).

This study begins its final (fifth) year of evaluation of seven preschool programs for the deaf employing a variety of methodological approaches and operating under different philosophies of education in such a way as to identify and isolate variables predictive of success.

Analysis of the 1972-73 data is in progress. Preliminary data indicate that over-all scores of subjects on the five visual-motor subtests of the ITPA are again almost identical to the norms established for children with normal hearing. This appears to indicate essentially normal functioning for deaf children. As in 1972, scores on four of the five subtests indicate stabilization near or regression toward the hearing mean of 36. However, the deaf subjects have

continued to maintain their relatively higher scores on the Manual Expression subtest indicating that deaf children may develop superior skills in this area. Results of the Receptive Communication Scale reveal a hierarchy of intelligibility across the modes of communication tested similar to that found in 1972. The least efficient receptive mode was sound alone. Performance improved with the addition of speechreading. Further improvement was noted in the sound and speechreading plus fingerspelling mode while the sound, speechreading and fingerspelling plus sign mode proved to be the most efficient mode of receptive communication. Administration of the Performance segment of the Wechsler Intelligence Scale for Children (WISC) is planned for all seven schools in the fall.

Project I-3. The Development of the Morphological Structure of Deaf Children of Deaf Parents (Donald Moores, Barbara Best, and Robert Hoffmeister).

This investigation is examining the processes and procedures through which children primarily exposed to some variety of American Sign Language (ASL) develop their linguistic abilities. Of primary concern is the extent to which the developmental sequence parallels that of normally speaking children. The effect of this system on the development of speech skills is another major area of investigation.

Filming has continued on a basis of a session every six to eight weeks for each child over the past year, and the films have been transcribed into an English gloss. A new transcription system, including more information about the children's utterances was devised, and all films have been put into this new system. There is now data for a year and a half on some children, and developmental trends are being analyzed.

Three new subjects were identified, two at six months of age, and one at 18 months of age. One of the younger subjects has a hearing twin. Filming of these subjects is in progress, and data on their cognitive, social, and motor development is being gathered.

Analysis of the development of certain linguistic structures has begun on those children for whom more than a year of data is available. Development of negatives and questions are being considered first, and the acquisition of negatives seems to parallel that found by other investigators (Fischer, 1973).

Project I-4. Development of Receptive Communication in Deaf Children from 2 1/2 to 3 1/2 Using Rebus and Sign Language (Charlotte Clark, Donald Moores, and Richard Woodcock).

Beginning its third year, this project's objective is to facilitate the development of language skills in young hearing impaired children by using rebuses and sign language.

Results of the Minnesota Early Language Development Sequence (MELDS) to present include: 1) completion of 112 classroom and 112 parent lessons, consisting of a review lesson and a principal lesson for each of the 224 lessons; 2) development of supplementary materials, worksheets, picture cards, sentence cards and concept pictures; 3) a compilation of a glossary of signs and rebuses. Almost half the lessons were field tested and revised by the end of the 1972-73 school year. The remainder will be field tested and revised in fall, 1973, and the winter and spring of 1974. A modified version (without signs) will be used by Project I-1 (Rynders and Horrobin) beginning in the fall of 1973. Distal field testing of the revised version will be done during the 1973-74 school year.

Project I-5. Early Identification of Children with Potential Communication Handicaps (Mildred C. Templin).

The purpose of this project is to attempt to identify, as early as possible, potentially speech-handicapped children, to explore characteristics of early articulation as predictors of later articulation, academic and social deficiency, and to describe the longitudinal development of articulation. It is an outgrowth of an earlier study by Professor Templin which focused on articulation development and the relation of articulation to a number of communication and other skills.

As of September 1st, a number of analyses to determine factors identifying children with potential articulation and academic deficits have been completed across samples selected according to kindergarten articulation performance; for example, comparison of eleventh grade performance on spelling, oral and silent reading personality, a cloze passage, syntactic maturity in written language, and articulation. A report comparing the articulation and nonarticulation performance of the longitudinal samples from first through eleventh grade is in preparation.

Articulation test data on children born in 1963 gathered by Dr. Rubin as part of the Minnesota Perinatal Project have been collected and prepared for punching. Printouts on all longitudinal data are available, and collation of consonant single data is underway.

Project I-6. Verbal and Nonverbal Help Seeking Behavior in Mentally Retarded Preschool Children (William Charlesworth and Mary Anne Kreutzer).

This project has as its objective the identification of those communication patterns in functionally mentally retarded children which are associated with failure to adapt to new situations. These patterns, for example, consist of a) the lack of awareness of the

relevance and necessity of outside help in solving certain problems, b) the lack of awareness of the communication skills and dispositions of outside persons, c) the absence of the ability or motivation to initiate contact with such persons when appropriate, and d) the lack of the ability to communicate the nature of the problem in an informative and comprehensible manner.

Results to date include the organization and training of a research team and the development of a program for the testing and training of help-seeking skills in preschool functionally retarded (high-risk) children. Data indicate significant individual differences in the ability to solve tasks by employing or failing to employ the various communication skills required for success. No age differences seem evident in the exercise of these skills in general. There are significant differences in the extent to which the five different tasks elicit the various skills from the children.

Program II

Improving the Academic Performance of Handicapped Children by Training in the Use of Cognitively Based Language Skills.

Principal Staff: Program Coordinator: James E. Turnure
Principal Investigators: William M. Bart
Byron Egeland
R. Hunt Kiegel
S. Jay Samuels
Arthur M. Taylor
Martha L. Thurlow
Robert H. Wozniak

The fundamental purpose of Program II is to develop and evaluate more effective techniques and materials for use in the assessment and teaching of pre-reading, reading and oral-language skills in kindergarten and early elementary age handicapped children. Results of work in this program will provide assistance to teachers in meeting the academic needs of handicapped children.

The model for Program II, which is similar to that of Program I, can be presented within the general framework of the following task analysis form:

1) Analysis of specific task requirements
2) Specification of requisite student skills
3) Identification of deficiencies or surfacing variables related to handicapped populations
4) Development of pedagogical techniques
5) Evaluation and demonstration of techniques
6) Dissemination of results

Project II-1. The Development of Verbal Elaboration Skills in the Young Mentally Retarded Child (James Turnure and Martha Thurlow).

This project is investigating the elaborational characteristics of communications effectively utilized in learning situations by young mentally retarded children in the classroom. Observations and collection of classroom data and investigations of the effectiveness of different types of elaborations used by teachers serve to specify the elaborative language skills of EMR children, to identify the elaborations used by teachers, and to provide the needed basis of knowledge for the development of guidelines for teacher implementation of elaborational strategies. In addition, the researchers have identified several characteristics of effective elaborations, and have used their research findings to contribute to the development and revision of elaborational materials being prepared for the classroom.

The findings of several studies reported in the past year have focused the researchers' interests on the role of interrogatives in the receptive and expressive communications of the young mentally retarded child. This line of research will be pursued in the coming year.

Project II-2. The Assessment and Training of Young Educationally Handicapped Children in the Use of Systematic Strategies for Organizing and Remembering (Hunt Riegel).

The objective of this study is to develop and evaluate training procedures which will facilitate the young educationally handicapped child's acquisition and utilization of strategies for (1) seeking and remembering associative relations between items, (2) creating shared meaning (elaborating) for otherwise disparate stimuli, and (3) deciding upon an appropriate learning set when presented with new material to be remembered.

To date, the first form of the SORTS test has been completed, and an administration and scoring manual is available. In addition, a major presentation of the test's statistical characteristics and developmental findings will be available by the end of August, 1973. The second form of the SORTS test has been piloted, with favorable results. The training sequence designed to aid retarded pupils in the organization of complex materials has been completed, although packaging of ditto masters and pictures must still be finished. The materials are available, but the packaging has not been completed.

Reports of studies conducted using both the test and the training materials have been completed as well as a report on a summer program based on the strategy of process approach.

A 20-minute film presenting both the test and the training is currently in its final editing phase. This film will be available

for training teachers to use the materials, and to provide some insight into the nature of the approach.

Data has been collected from two schools on reading decoding skills, reading aptitude, and SORTS performance in high, middle and low reading (ability grouped) first and second grade children.

Project II-3. A Mastery Based Experimental Program for Teaching Mentally Retarded Children Word Recognition and Reading Comprehension Skills Through Use of Hypothesis-Test Procedures (Jay Samuels, Teara Archwamety, Patricia Dahl and Pamela Terry).

The purposes of this study are to develop a complete listing of objectives and methods required for teaching the subskills necessary in fluent reading; to train children in the skills of automatic decoding so that they will be more efficient in using meaning to make predictions; and to study the growth of automaticity in higher and lower IQ children to determine possible differences in the rate of acquisition of automaticity.

Results to date indicate that children trained in hypothesis-test procedures are superior in tachistoscopic word recognition ($p < .005$) and in comprehension measured by cloze procedures ($p < .01$). The various tests and analyses showed no differences between groups which were trained on recognizing words that were flashed with a projector.

The results of this preliminary analysis support the efficacy of the methods under investigation. The hypothesis-test method of word recognition appears to be a viable method to use with children to aid them in high speed recognition and in comprehension.

The results of the present investigation, as well as one which was done a year earlier, indicate the viability and the usefulness of hypothesis-test methods for teaching recognition and comprehension processes. This hypothesis-test procedure is a language process which, with sufficient training, becomes automatic.

A comparison of normal and mentally retarded children on a perceptual learning task was also carried out to test the hypothesis of Estes (1970) and Zeaman and House (1963) that individuals of differing intelligence levels do not differ greatly in basic learning ability. Results showed no latency differences between groups when differences in reaction time (RT) were controlled. The conclusion that there was no difference in the efficiency of central processing of information by the two groups supported the hypothesis.

Project II-4. The Vocabulary Development Project (Arthur Taylor, James Turnure and Martha Thurlow).

Project II-4 has conducted several studies related to the development and evaluation of strategy based techniques, materials and programs which facilitate the young educable mentally retarded child's acquisition of (a) vocabulary, (b) reading and language skills, and (c) organizational strategies.

During the past year, Project II-4 has been involved in the development of instructional materials (the Money, Measurement and Time Programs) for young mentally retarded children. The materials have been designed to provide educationally handicapped students with a basic understanding of money, measurement and time, as well as to increase both their receptive and expressive communication abilities in these areas, by systematically developing the meaning of key terms in these three areas. Pilot testing and revisions of the Money, Measurement of Length and Measurement of Weight units and pilot testing of the two time units is now beginning. The Money and Measurement of Length Units were pilot tested with trainable retarded children, and found to be effective.

In addition to the concentrated effort on preparing classroom materials, the project has developed evaluative instruments for all units of instruction, both for diagnostic placement and for teacher assessment of instructional effectiveness. Guidelines have been developed to insure that the elaborational and other instructional strategies present in the materials are understood by the teacher (see the Teacher's Introduction to the Math Vocabulary Program).

Project II-5. Reading Improvement Through Training in Verbal Self-Instruction and Efficient Information Processing (Robert Wozniak and Margaret Nuechterlein).

The project has been investigating the relationship between cognitive impulsivity and deficiencies in the acquisition of reading skills. The major share of this year's completed work has involved (1) the collection of background material considered both for the further refinement of the verbal self-instructional curriculum (VSI) and extension of VSI to reading skills; (2) the initial incorporation of this material into the refined curriculum; and (3) the design and implementation of several small studies created to answer questions arising during the revision process (with respect to the problem of extending VSI to the teaching of reading skills and developing a maximally effective form of self instruction).

A review of all of the available literature relating to information extraction techniques and the potential for exploring the use of the verbal system and fostering such techniques was carried out.

This resulted in the compilation of a long annotated bibliography of this material. The bibliography is currently in draft form, and will be revised in the fall of 1973 for distribution. The major effect of this review was to provide information from which to revise the VSI curriculum in the direction of increased specificity and depth (in techniques for the analysis of information from graphic displays and for accurate direction following).

The revision process itself is still going on. It will be completed with the proposed integration of the revised material with that already developed by Byron Egeland. The final process of integration will result by mid October in the creation of a teacher's guide which will be presented to teachers upon the initiation of the post-revision demonstration project in late October.

PRINCIPAL INVESTIGATORS

William Bart

Barbara Best

(Jane Greco) and Charlotte Clark

William Charlesworth

Byron Egeland

Don Moores

John Rynders

Jay Samuels

Arthur Taylor

Mildred Templin

James Turnure

Robert Wozniak

IV. Administrative Organization

The major responsibility for the functioning of the Center lies with the Director, who is the point of articulation between the Projects and Program Research Branch of the Bureau of Education for the Handicapped and the University of Minnesota. The administrative organization of the Center is illustrated on the diagram below.

Center Director. The Director represents the Center both within and outside of the University. He is responsible to the chairman of the Department of Special Education and to the Research, Development and Demonstration Center Policy Committee. The Director is expected to function as a facilitator of research and as a catalyst to the research activities of the Center.

The Director is responsible under the terms of the grant for supervising the work of the Center to assure that the terms and conditions of all contracts are met. He implements the Center's policies and guidelines relating to program, personnel, and budget:

1) by allocating personnel and funds within the general plans adopted by the Policy Committee.
2) by making appointments of research staff, and
3) by formulating the budget and by controlling expenditures accordingly.

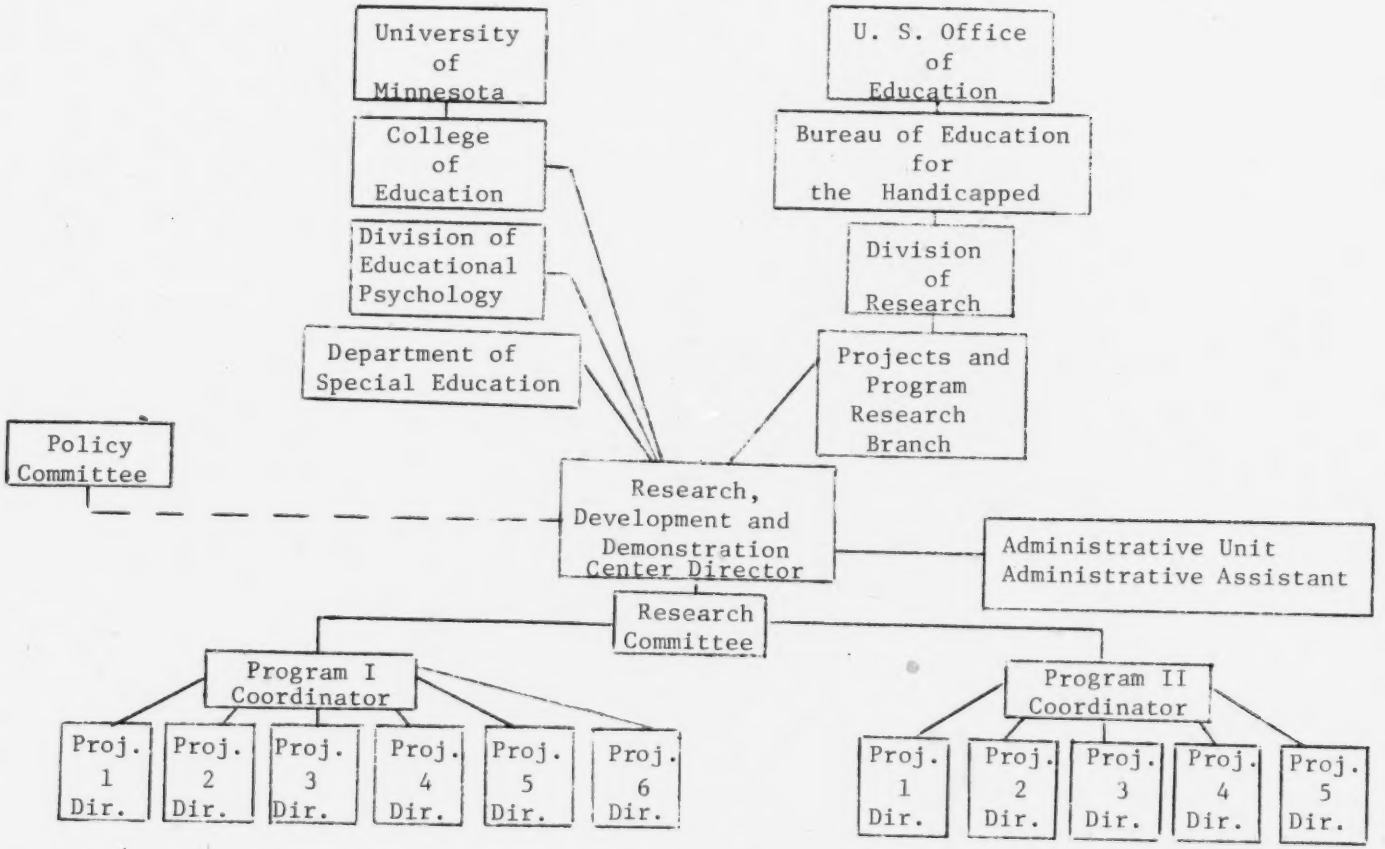
Administrative Assistant. The Administrative Assistant is responsible for carrying out duties assigned to him by the Director. He acts as chief administrative officer to the Center Director and represents the Center in selected problems relating to line operations. He supervises the maintenance of budget control records, makes the final determination, within policy guidelines, as to the appropriations of charges. He analyzes problems assigned by the director, collects information required for planning, develops alternatives and works with staff members to take necessary action. By coordinating the service functions and day to day management activities, the work of the administrative assistant frees the Director to concentrate his energies on the role of research facilitator and catalyst.

Research Committee. The Research Committee is comprised of the Center Director as Committee Chairman, the Chairman of the Department of Special Education or his designee, the Chairman of the Department of Communication Disorders or his designee and two active researchers. The research members are elected annually by professors and research associates of the Center.

Figure 1

Administrative Organization of University of Minnesota

Research, Development and Demonstration Center in Education of Handicapped Children



The Research Committee functions to advise the Center Director in making decisions regarding all major commitments of Center resources. This Committee:

a) assures that new project requests for Center funds are given proper evaluation and review and shall recommend the specific disposition of all such requests,

b) ensures that all supported projects are appropriately monitored

c) advises on the program of seminars and research training conducted by the Center.

RD&D Center Research Committee

Donald F. Moores (Chairman)
Professor
Department of Special Education

Rosalyn Rubin
Associate Professor
Department of Special Education

S. Jay Samuels
Associate Professor
Department of Psychological Foundations

R. Hunt Riegel
Research Associate
Research, Development and Demonstration Center
in Education of Handicapped Children

Clark Starr
Professor
Department of Communication Disorders

Policy Committee. The Policy Committee consists of the College Dean for Research and Development, Chairman of the Department of Special Education who serves as chairman of the committee, the Center Director who acts as executive secretary, two active researchers, and two "at-large" members. The members of the Policy Committee are appointed by the Chairman of the Department of Special Education in consultation with the Center Director. Research members and "at-large" members serve staggered three year terms; consecutive terms are prohibited.

The Policy Committee is responsible for formulating objectives of the Center, for establishing general policies and programs consistent with those objectives, for the establishment of general priorities for Center activities and Center resources, and for reviewing the general progress of the Center programs.

RD&D Center Policy Committee

Frank Wood (Chairman)
Professor
Department of Special Education

Donald F. Moores (Executive Secretary)
Professor
Department of Special Education

Robert Bruininks
Associate Professor
Department of Special Education

John Flavell
Professor
Institute of Child Development

Gerald Siegel
Professor
Department of Communication Disorders

James Turnure
Associate Professor
Department of Special Education

Wayne Welch
Assistant Dean
College of Education

Program Coordinators. The program coordinators are responsible for cooperative programmatic planning and for monitoring of on-going projects. They make recommendations to the Director and Research Committee concerning initiation, modification or termination of projects and of overall programmatic modification. The coordinators also provide leadership in preparation of the Program Section of the request for renewal of the grant.

Program Committees. The project directors of each program area constitute a Program Committee. They are charged with defining and facilitating the achievement of program goals. Each Program Committee monitors all on-going projects in its area and makes recommendations, through its Coordinator, to the Director and Research Committee concerning initiation, modification and termination of projects and of overall programmatic modification.

Project Directors. Each project director, in addition to assuming responsibility for conducting individual projects, must make a contribution to programmatic planning and to the development of the Center. They participate in several center and program area meetings, submit progress reports, contribute to sections of the requests and provide the Administrative Assistant information on expenditures.

Barbara Best, Mary Jane Harlow and Marilyn Goodwin

Roseshel Howe, Martha Thurlow and Joni Blumenfeld

Facilities

An additional 3,000 square feet of space was obtained this year for Center activities. Facilities are now housed in Pattee Hall and at 11 Oak Street S.E., both on the Minneapolis Campus of the University of Minnesota. The Pattee Hall facility is shared with the Department of Special Education and the Special Education Instructional Improvement Laboratory. The core of the Pattee Hall facility consists of the Director's office, accomodations for three secretaries, accomodations for research associates, fellows, and assistants, meeting facilities, and a "measurement" room with two Smith Corona Marchant computers and a Friden calculator. The Oak Street facility, consists of five offices, a conference room, an observation room, and two large work areas with a total of 1,800 square feet.

SEIIL

The Special Education Instructional Improvement Laboratory (SEIIL) serves both the Department of Special Education and the Research, Development and Demonstration Center as a resource center in fields related to Special Education, Research, and teacher training.

SEIIL provides a limited check out service to members of the research staff of the Research, Development and Demonstration Center and to students and staff of the Department of Special Education. Library holdings include extensive published and unpublished works in the fields related to special education, research, and teacher training, an audio visual resource center equipped to produce black and white video taped materials, simple slides and transparencies, and audio cassette and reel to reel recordings. In addition to the services listed above, the SEIIL maintains an extensive file of tests and testing materials, subscriptions to over 100 periodicals, and a file of ERIC microfice documents related to Special Education, a collection of audiovisual materials, and an assortment of curriculum materials. Total volume of the collection, excluding periodicals, is over 10,000 volumes.

Some of the most valuable holdings of SEIIL are the self instructional packages which have been developed by faculty members with the resources available in SEIIL. These include packages covering the development of perceptual motor skills, methods of teaching deaf children to speak, and the acquisition of language by children, as well as a series of video tapes dealing with methods of administration and interpretation of various tests.

The resources of SEIIL are catalogued under a system which uses uniform ERIC descriptors, and which was designed for compatibility with a computer search system. At present SEIIL staff are trained to assist researchers in manual search techniques, and to aid in the design of computer search sequences which can be used

with facilities at the main education laboratory located on the University campus.

SEIIL also serves as a liason between researchers and the various public and private libraries in the Twin Cities Area, and to assist in the acquisition of materials necessary to research projects through inter-library loan or special ordering procedures.

Evaluation of Preschool Programs for the Deaf, Moores

Evaluation of Preschool Programs for the Deaf, Moores

V. Personnel

Principal investigators represent a variety of departments and administrative units. Present membership is drawn from Special Education, Child Development, Communication Disorders, Pediatrics and Psychological Foundations. The Center provides support to departments to secure released time to permit investigators to conduct research. In addition to the major investigators, there is a substantial support staff consisting of both full-time personnel and of graduate and undergraduate research assistants.

Administration

Director: Donald F. Moores, Professor, Department of Special Education, Division of Educational Psychology.

Area I Coordinator: John E. Rynders, Associate Professor, Department of Special Education, Division of Educational Psychology.

Area II Coordinator: James E. Turnure, Associate Professor, Department of Special Education, Division of Educational Psychology.

Administrative Assistant: Sylvester Boeckman

Executive Secretary: Audrey Buhr; 1970, Mankato Commercial College, Legal and Private Secretarial; College of Liberal Arts, University of Minnesota.

Staff

Faculty

William M. Bart, Ph.D., 1969, University of Chicago, Associate Professor, Department of Psychological Foundations, Division of Educational Psychology.

Barbara J. Best, Ph.D., 1972, University of California, Berkeley, Research Associate, Research, Development and Demonstration Center in Education of Handicapped Children.

William Charlesworth, Ph.D., 1962, Cornell University, Associate Professor, Institute of Child Development.

Charlotte R. Clark, M.A., 1962, Peabody College, Research Associate.

Byron Egeland, Ph.D., 1966, University of Iowa, Associate Professor, School Psychology Training Program.

Jean M. Horrobin, M.D., 1960, Manchester University, Assistant Professor, Pediatrics.

Donald F. Moores, Ph.D., 1967, University of Illinois, Professor, Department of Special Education, Division of Educational Psychology, Joint Appointment Department of Communication Disorders.

R. Hunt Riegel, Ph.D., 1972, University of Minnesota, Research Associate, Research, Development and Demonstration Center in Education of Handicapped Children.

Gail Roberts, Ph.D., 1971, Purdue University, NICHD Postdoctoral Fellow, Institute of Child Development.

Rosalyn A. Rubin, Ph.D., 1961, University of Minnesota, Associate Professor, Department of Special Education, Division of Educational Psychology.

John E. Rynders, Ph.D., 1967, University of Wisconsin, Associate Professor, Department of Special Education, Division of Educational Psychology.

S. Jay Samuels, Ed.D., 1964, University of California, Los Angeles, Professor, Department of Psychological Foundations, Division of Educational Psychology.

Arthur M. Taylor, M.A., 1970, Indiana University, Research Associate.

Mildred C. Templin, Ph.D., 1947, University of Minnesota, Professor, Institute of Child Development, Joint Appointment Department of Communication Disorders.

James E. Turnure, Ph.D., 1965, Yale University, Associate Professor, Department of Special Education, Division of Educational Psychology, Joint Appointment Institute of Child Development.

Richard W. Woodcock, Ed.D., 1956, University of Oregon, Adjunct Professor, Department of Special Education, Division of Educational Psychology,

Robert H. Wozniak, Ph.D., 1970, University of Michigan, Assistant Professor, Institute of Child Development.

Research Fellows

Pi-Nian Chang, B.Ed., 1965, Taiwan University; M.A., 1970, University of Minnesota.

Judith Fallenstein, B.S., 1964, Mankato State College; M.S.E., 1968, Eau Claire, Wisconsin.

Steven Fisher, B.S.E., 1966, Northern State College.

Marylee Fithian, B.S., 1962, University of Minnesota; M.A., 1972, University of Minnesota.
Gertrude Glaman, B.A., 1947, Central College; M.S., 1953, University of Minnesota.
Marilyn Goodwin, B.S., 1967, State University College at Buffalo; M.A., 1971, Newark State College.
Mary Jane Harlow, B.S., 1970, City College of the City University of New York.
Robert Hoffmeister, B.S., 1970, University of Connecticut; M.Ed., 1971, University of Arizona.
David Liu, B.C., 1967, Taiwan Provincial College of Marine & Oceanic Technology; M.S., 1973, University of Minnesota.
Marcia O'Brien, B.A., 1971, University of Minnesota--Duluth; M.A., 1972, University of Arizona.
Martha Thurlow, B.A., 1968, University of Minnesota; M.A., 1971, University of Minnesota.
Karen Weiss, B.A., 1969, St. Olaf College.
Judith Wolf, B.S., 1962, University of Minnesota; M.S., 1968, University of Illinois.

Research Specialists

Lana Kjergaard, 1964, Grandview College; B.A., 1967, Wartburg.

Graduate Research/Teaching Assistants

Teara Archwamety, B.Ed., 1966, Chulalongkorn University, Thailand, M.A., 1970, University of Minnesota; Ph.D., 1973, University of Minnesota.
Beverly Beckman, B.S., 1958, University of Minnesota; M.A., 1962, University of Minnesota.
Andrea Canter, B.A., 1971, University of Iowa; M.A., 1972, University of Minnesota.
Fred Danner, B.A., 1970, University of Wisconsin.
Phyllis Fischer, B.S., 1967, University of Minnesota; M.A., 1972, University of Minnesota.
Roxane Gudeman, B.A., 1962, Radcliffe College; M.Ed., 1964, Harvard University.
Barbara Hibbs, M.A., 1972, University of Minnesota.
Carolyn Hansen, B.A., 1971, University of Minnesota.
Diane Kopstein, B.S., 1964, University of Minnesota.
Mary Anne Kreutzer, Pre-doctorate, 1973, University of Minnesota.
Gale McLain, B.A., University of Minnesota.
Kitty Miller, B.A., 1969, University of Minnesota.
JoEllen Milstein, B.S., 1972, University of Minnesota.
Christine Mueller, B.S., 1968, Valparaiso University; M.Ed., 1969, Xavier University; Ph.D. pending, University of Minnesota.
Stephanie Lifson, B.A., 1973, University of Minnesota.
Kathy Nelson, B.A., 1973, University of Minnesota.
Vida Niedorf, B.F.A., 1970, Minneapolis College of Art and Design.
Wendy Nyquist, B.A., M.A., University of Minnesota (pending).

David Swanson, B.S., 1973, University of Minnesota.
Coral Sullivan, College of Home Economics, 1974.
Henry Taxis, B.A., 1970, Gustavus Adolphus College.
Anne Thibodeau, B.S., 1972, University of Massachusetts.
Mary Vogt, B.S., 1972, University of Minnesota.
Merry Pat Wahlin, B.S., 1970, University of Minnesota.
David Wangsness, B.A., 1971, University of Minnesota.

Undergraduate Research/Teaching Assistants

Lee Barrie, Institute of Technology, 1974.
Ellen Benjamin, College of Liberal Arts, 1974.
Patricia Bland, College of Liberal Arts, 1975.
Aloysius R. Cheney, College of Liberal Arts, 1973.
Debbie Danner, College of Liberal Arts, 1975.
Michael Dinneen, College of Liberal Arts, 1974.
Rick Evarts, Institute of Technology, 1973.
Barbara Friedman, College of Liberal Arts, 1974.
Janice Gritti, College of Education, 1973.
Mary Jambeck, College of Liberal Arts, 1973.
JoAnne Johnson, B.A., 1973, University of Minnesota.
Joyce Juster, B.S., 1973, University of Minnesota.
Linda Kjerland, B.A., 1973, University of Minnesota.
Pamela Lifson, College of Liberal Arts, 1974.
Ellen Mack, College of Education, 1973.
Mark McGee, College of Liberal Arts.
Margaret McIntosh, College of Liberal Arts, 1974.
Patricia Moore, College of Liberal Arts, 1973.
Margaret Nuechterlein, B.A., 1973, University of Minnesota.
Candace Riquet, B.A., 1973, University of Minnesota.
Linda Ritchey, College of Education, 1973.
Victoria Ryan, College of Liberal Arts, 1973.
Sherry Sheppard, B.S., 1973, University of Minnesota.
Ann Sommers, B.S., 1973, University of Minnesota.
Patricia Strike, College of Liberal Arts, 1973.
Pat Verant, College of Liberal Arts, 1973.
Alexander Wilkinson, 1973, University of Minnesota.
Christi Wirth, College of Liberal Arts, 1973.
Tova Zilberstein, College of Education, 1973.

Clerks

Pankaj Palvia, College of Liberal Arts, 1974.
William Sai Fong Wu, Institute of Technology, 1976.

Commercial Artists

Melvin Ford
Warren Hanson
Dennis McGrane

Interpreters

Vicki Anderson
Diane Holte, Gallaudet College.
Nancy Rarus, B.A., 1962, Gallaudet College.
Joan Stephan, B.A., 1968, Principia College.
Dennis Warick, B.A., 1972, Gallaudet College.

Junior Scientists

Linda Donnelly, B.A., 1973, University of Minnesota.
Roseshel Howe, B.S., 1972, University of Minnesota.
Marlisa Wangsness, B.A., 1969, Purdue University.

Psychometrist

Joni Blumenfeld, B.S., 1972, University of Minnesota.

Psychometric Assistants

Mary Adrian, A.A., 1972, St. Mary's Jr. College.
Patricia Appleby, College of Education, 1974.
Lyle Chastain, B.A., 1960, Oberlin College.
Ruth Donahue, B.S., 1972, University of Minnesota.
Judith Eickhoff, B.S., 1972, University of Minnesota.
Jane Kaatrud, B.A., 1967, Northwestern.
Thomas Ockuly, B.A., 1971, Carlton College.
Richard Osborne, B.A., 1971, St. John's University.
Dorothy Spang, College of Liberal Arts, 1974.
Mary Stoefen, B.A., 1971, University of Minnesota.
Sue Wallen, College of Education, 1973, University of Minnesota.

Psychometric Assistant Aides
Judith Conger
Mary Sue Drott, B.A., 1969, University of Minnesota.
William Smith

Sr. Clerk Typists

DeAnna Gehant, 1969, Legal & Private Secretarial, Minnesota School of Business; College of Liberal Arts, University of Minnesota.
Susanne Hilton, B.A., 1971, University of Minnesota.
Virginia Lea, B.S., 1972, Moorhead State College.
Margitta Lindberg, C.B.S., 1973, University of Minnesota.
Karen Pugh, 1972, General Office Practice, Technical Vocational Institute.
Cheryll Sorensen, College of Education, 1973.
Stephanie Tarara, College of Liberal Arts, 1973.

Sr. Lab Technician/Attendants/trainees

Robert Delastrada, B.A., 1968, University of Minnesota; M.S., 1971, Cornell University.
Jean Drury
Jane Greco, B.A., 1965, University of Minnesota.
Martha Lindall, B.A., University of Minnesota.
Susan Mattson, University of Oregon.
Mary McCracken, B.S., 1964, University of Minnesota.
Barbara McKnight, 1970, Michigan State University.
Marsha Unze, B.A., 1969, University of Minnesota.

Center for Research in Human Learning

Several members of the Research, Development and Demonstration Center in Education of Handicapped Children are also affiliated with the University of Minnesota Center for Research in Human Learning. The major mission of the Center for Research in Human Learning is to develop a continuous and close working relationship among psychologists in various departments of the University of Minnesota doing research on human learning. The Human Learning Center brings together persons of many viewpoints representing different research interests and different goals, both practical and theoretical. The following individuals are affiliated with both Centers:

William Bart
William Charlesworth
Donald Moores
S. Jay Samuels
James Turnure
Robert Wozniak

Evaluation of Preschool Programs for the Deaf, Moores

Minnesota Early Language Development Sequence (MELDS), Clark and Moores

VI. Dissemination and Service Activities

1972 - 1973 Center Reports

1. Clark, C. R. & Greco, J. A. Minnesota early language development sequence: Glossary of rebuses and signs. Occasional Paper No. 18, June 1973.

2. Samuels, S. and Dahl, P. Automaticity, reading, and mental retardation. Occasional Paper No. 17, May 1973.

3. Samuels, S. and Dahl, P. Relationships among IQ, learning ability and reading achievement. Occasional Paper No. 16, May 1973.

4. Best, B. Classificatory development in deaf children: Research on language and cognitive development. Occasional Paper No. 15, April, 1973.

5. Riegel, R. H. & Taylor, A. M. Strategies in the classroom: A summer remedial program for young handicapped children. Occasional Paper No. 14, March 1973.

6. Rynders, J. Two basic considerations in utilizing mothers as tutors of their very young retarded or potentially retarded children. Occasional Paper No. 12, January 1973.

7. Hoffmeister, R. and Moores, D. The acquisition of specific reference in the sign language of a deaf child of deaf parents. Research Report No. 53, August 1973.

8. Turnure, J. Interrelations of orienting responses, response latency and stimulus choice in children's learning. Research Report No. 52, May 1973.

9. Rynders, J. & Buium, N. The early maternal linguistic environment of normal and Down's Syndrome (Mongoloid) children. Research Report No. 51, May 1973.

10. Archwamety, T. & Samuels, S. J. A mastery based experimental program for teaching mentally retarded children word recognition and reading comprehension skills through use of hypothesis/test procedures. Research Report No. 50, May 1973.

11. Bart, W. The process of cognitive structure complexification. Research Report No. 49, April 1973.

12. Riegel, R. H., Taylor, A. M., & Danner, R. W. The effects of training in the use of a grouping strategy on the learning and memory capabilities of young EMR children. Research Report No. 48, April 1973.

13. Turnure, J. & Thurlow, M. The latency of forward and backward association responses in an elaboration task. Research Report No. 47, March 1973.

14. Riegel, R. H. & Taylor, A. M. A comparison of conceptual strategies for grouping and remembering employed by educable mentally retarded and non-retarded children. Research Report No. 46, February 1973.

15. Rynders, J., Bruininks, R., & Gross, J. Social acceptance of mildly retarded pupils in resource rooms and regular classes. Research Report No. 45, January 1973.

16. Turnure, J. & Thurlow, M. The effects of interrogative elaborations in the learning of normal and EMR children. Research Report No. 44, December 1972.

17. Turnure, J. and Samuels, S. Attention and reading achievement in first grade boys and girls. Research Report No. 43, November 1972.

18. Riegel, R., Taylor, A., Clarren, S. & Danner, F. Training educationally handicapped children to use associative grouping strategies for the organization and recall of categorizable material. Research Report No. 42, November 1972.

19. Turnure, J. & Thurlow, M. The effects of structural variations in elaboration and learning by normal and EMR children. Research Report No. 41, September 1972

20. Taylor, A. M. & Bender, N. Variations of strategy training and the recognition memory of EMR children. Research Report No. 40, September 1972.

21. Moores, D., McIntyre, C. and Weiss, K. Evaluation of programs for hearing impaired children: Report of 1971-72. Research Report No. 39, September 1972.

22. Riegel, R. H., Danner, F. W., Johnson, L. S. & Kjerland, L. K. Improving organization and memory: A sequentially arranged set of activities to improve the learning and retention capabilities of young educationally handicapped children. (Teacher's manual). Research, Development and Demonstration Center in Education of Handicapped Children, May 1973.

23. Riegel, R. H. Sampling organization and recall through strategies: administration and scoring manual. Research, Development and Demonstration Center in Education of Handicapped Children, May 1973.

24. Taylor, A. M., Turnure, J. E., & Thurlow, M. L. Money Instructional Unit, experimental version. Vocabulary Development Project. 1973.

25. Taylor, A. M., Turnure, J. E., & Thurlow, M. L. Measurement of Length Instructional Unit, experimental version. Vocabulary Department Project. 1973.

26. Taylor, A. M., Turnure, J. E., & Thurlow, M. L. Measurement of Weight Instructional Unit, experimental version. Vocabulary Development Project. 1973.

27. Riegel, R. H., Danner, F. W., & Taylor, A. M. Steps in sequence: a sequentially arranged series of activities designed to improve the child's grouping and memory strategies in the class. Development Report No. 2, 1972.

28. Taylor, A. M., Thurlow, M. L., & Turnure, J. E. The teacher's introduction to: the Math Vocabulary Program. Development Report No. 1, March 1973.

29. Wozniak, R. H., & Nuechterlein, P. Reading improvement through verbally self-guided looking and listening. Research, Development and Demonstration Center Teacher's Report, 1973.

30. Moores, D. Communication - Some unanswered questions and some unquestioned answers. Occasional Paper No. 10, July 1972.

Previous Center Reports

31. Taylor, M. & Whitely, S. Overt verbalization and the continued production of effective elaborations by EMR children. Research Report No. 38, June 1972.

32. Riegel, R. Measuring educationally handicapped children's organizational strategies by sampling overt groupings. Research Report No. 37, May 1972.

33. Gallistel, E., Boyle, M., Curran, L. & Hawthorne, M. The relation of visual and auditory aptitudes to first grade low readers' achievement under sight-word and systematic phonic instruction. Research Report No. 36, May 1972.

34. Turnure, J. & Thurlow, M. Verbal elaboration in children: Variations in procedures and design. Research Report No. 34, March 1972.

35. Krus, D. & Bart, W. An ordering-theoretic method of multidimensional scaling of items. Research Report No. 33, March 1972.

36. Turnure, J. & Larsen, S. Effects of various instruction and reinforcement conditions on the learning of a three-position oddity problem by nursery school children. Research Report No. 32, March 1972.

37. Turnure, J. & Larsen, S. Outerdirectedness in mentally retarded children as a function of sex of experimenter and sex of subject. Research Report No. 31, January 1972.

38. Rynders, J. & Horrobin, J. M. A mobile unit for delivering educational services to Down's syndrome (mongoloid) infants. Research Report No. 30, January 1972.

39. Danner, F. & Taylor, A. Pictures and relational imagery training in children's learning. Research Report No. 29, December 1971.

40. Turnure, J. & Thurlow, M. Verbal elaboration phenomena in nursery school children. Research Report No. 28, December 1971.

41. Moores, D. & McIntyre, C. Evaluation of programs for hearing impaired children: Progress report 1970-1971. Research Report No. 27, December 1971.

42. Samuels, S. Success and failure in learning to read: A critique of the research. Occasional Paper No. 9, November 1971.

43. Samuels, S. Attention and visual memory in reading acquisition. Research Report No. 26, November 1971.

44. Turnure, J. & Thurlow, M. Verbal elaboration and the promotion of transfer of training in educable mentally retarded. Research Report No. 25, November 1971.

45. Taylor, A., Josberger, M. & Whitely, S. Elaboration training and verbalization as factors facilitating retarded children's recall. Research Report No. 24, October, 1971.

46. Bart, W. & Krus, D. An ordering-theoretic method to determine hierarchies among items. Research Report No. 23, September 1971.

47. Taylor, A., Josberger, M. & Knowlton, J. Mental elaboration and learning in retarded children. Research Report No. 22, September 1971.

48. Turnure, J. & Larsen, S. Outerdirectedness in educable mentally retarded boys and girls. Research Report No. 21, September 1971.

49. Bruininks, R., Glaman, T., & Clark, C. Prevalence of learning disabilities: Findings, issues, and recommendations. Research Report No. 20, June 1971.

50. Thurlow, M. & Turnure, J. Mental elaboration and the extension of mediational research: List length of verbal phenomena in the mentally retarded. Research Report No. 19, June 1971.

51. Siegel, G. Three approaches to speech retardation. Occasional Paper No. 8, May 1971.

52. Moores, D. An investigation of the psycholinguistic functioning of deaf adolescents. Research Report No. 18, May 1971.

53. Moores, D. Recent research on manual communication. Occasional Paper No. 7, April 1971.

54. Turnure, J., Larsen, S. & Thurlow, M. Two studies on verbal elaboration in special populations: I. The effects of brain injury II. Evidence of transfer of training. Research Report No. 17, April 1971.

55. Bruininks, R. & Rynders, J. Alternatives to special class placement for educable mentally retarded children. Occasional Report No. 6, March 1971.

56. Moores, D. Neo-oralism and the education of the deaf in the Soviet Union. Occasional Paper No. 5, February 1971.

57. Feldman, D., Marrinan, B. & Hartfeldt, S. Unusualness, appropriateness, transformation and condensation as criteria for creativity. Research Report No. 16, February 1971.

58. Broen, P. & Siegel, G. Variations in normal speech disfluencies. Research Report No. 15, January, 1971.

59. Feldman, D. Map understanding as a possible crystallizer of cognitive structures. Occasional Paper No. 4, January 1971.

60. Rynders, J. Industrial arts for elementary mentally retarded children: An attempt to redefine and clarify goals. Research Report No. 3, January 1971.

61. Moores, D. Education of the deaf in the United States. Occasional Paper No. 2, November 1970.

62. Bruininks, R. & Clark, C. Auditory and visual learning in first-, third-, and fifth-grade children. Research Report No. 14, November 1970.

63. Bruininks, R. & Clark, C. Auditory and visual learning in first grade educable mentally retarded normal children. Research Report No. 13, November 1970.

64. Bruininks, R. Teaching word recognition to disadvantaged boys with variations in auditory and visual perceptual abilities. Research Report No. 12, November 1970.

65. Bruininks, R. & Lucker, W. Change and stability in correlations between intelligence and reading test scores among disadvantaged children. Research Report No. 11, October, 1970.

66. Rubin, R. Sex differences in effects of kindergarten attendance on development of school readiness and language skills. Research Report No. 10, October 1970.

67. Rubin, R. & Balow, B. Prevalence of school learning and behavior disorders in a longitudinal study population. Research Report No. 9, October 1970.

68. Feldman, D. & Bratton, J. On the relativity of giftedness: An empirical study. Research Report No. 8, August 1970.

69. Turnure, J., Thurlow, M. & Larsen, S. Syntactic elaboration in the learning and reversal of paired-associates by young children. Research Report No. 7, January 1971.

70. Martin, R. & Berndt, L. The effects of time-out on stuttering in a 12 year old boy. Research Report No. 6, July 1970.

71. Turnure, J. & Walsh, M. The effects of varied levels of verbal mediation on the learning and reversal of paired-associates by educable mentally retarded children. Research Report No. 5, June 1970.

72. Turnure, J., Rynders, J. & Jones, N. Effectiveness of manual guidance, modeling and trial and error learning for inducing instrumental behavior in institutionalized retardates. Research Report No. 4, June 1970.

73. Turnure, J. Reactions to physical and social distractors by moderately retarded institutionalized children. Research Report No. 3, June 1970.

74. Moores, D. Evaluation of preschool programs: An interaction analysis model. Occasional Paper No. 1, April 1970.

75. Feldman, D. & Markwalder, W. Systematic scoring of ranked distractors for the assessment of Piagetian reasoning levels. Research Report No. 2, March 1970.

76. Feldman, D. The fixed-sequence hypothesis: Individual differences in the development of school related spatial reasoning. Research Report No. 1, March 1970.

Staff Publications, 1972-1973

Bart, W. An algebraic representation of concepts. Journal of Structural Learning, 1972, 3, 27-35.

78. Bart, W. Transformational closure for the concept clock. Journal of Structural Learning, 1972, 3, 99-107.

79. Bart, W. A hierarchy among attitudes toward the environment. Environmental Education, 1972, 4, 10-14. Also, in C. Schoenfeld (Ed.), Interpreting Environmental Issues. Madison, Wisconsin: Dembar Educational Research Services, 1973.

80. Bart, W. A pattern analytic approach to scalogram analysis: an introduction to practical applications of tree theory. Ceskoslovenska Psychologie. (In press)

81. Bart, W. The process of cognitive structure complexification. Journal of Structural Learning. (In press)

82. Bart, W. and Airasian, P. Ordering theory: a new and useful measurement model. Educational Technology, 1973, 13, 27-35.

83. Bart, W. and Krus, D. An ordering-theoretic method to determine hierarchies among items. Educational and Psychological Measurement, 1973, 33, 291-300.

84. Bart, W. and Krus, D. An ordering-theoretic method of multi-dimensional scaling of items. Educational and Psychological Measurement. (In press)

85. Bender, N. N. & Taylor, A. M. Instructional treatments based on learning strategies and the recognition memory of retarded children. American Educational Research Journal. (In press)

86. Bruininks, R. H., Glaman, G. M. & Clark, C. R. Issues in determining prevalence of reading retardation among elementary school children. Reading Teacher. (In press)

87. Charlesworth, W. R. Developmental Psychology: Does it offer anything distinctive? In Looft, W. R., (Ed.) Developmental Psychology: A Book of Readings, 1972.

88. Charlesworth, W. R. and Kreutzer, M. A. Facial expressions of infants and children. In P. Ekman (Ed.) Expressions of Emotions in Man and Animals. (In press)

89. Danner, F. W. & Taylor, A. M. Pictures and relational imagery training in children's learning. Journal of Experimental Child Psychology. (In press)

90. Duffy, O., Clair, T., Egeland, B. and DiNello, M. Relationship of intelligence, visual-motor skills and psycholinguistic abilities with achievement in the third, fourth, and fifth grades: a follow-up study. Journal of Educational Psychology, 1972, 63, 358-362.

91. Egeland, B. Book review: The Psychological Assessment of Children. Journal of Educational Measurement, 1972, 63, 358-362.

92. Egeland, B. Test review: Sprigle School Readiness Survey and Gesell Developmental Examination. In W. Frankenburg (Ed.), Pediatric Screening Tests. Springfield, Ill.: Charles C. Thomas, publisher. (In press)

93. Egeland, B. Training impulsive children in the use of more efficient scanning techniques. Child Development. (In press)

94. Egeland, B. Training impulsive children in the use of more efficient scanning techniques. Proceedings of the 81st Annual Convention of the American Psychological Association, 1973, 6, 677-678. (Summary of paper read at 1973 APA Convention, Montreal, Canada.)

95. Moores, D. Book review of Kates, S., Language development in deaf and hearing adolescents. Northampton, Mass.: Clarke School for the Deaf, 1972. American Annals of the Deaf. (In press)

96. Moores, D. Deafness in the United States. Moscow Institute of Defectology (published in Russian), 1972.

97. Moores, D. Families and deafness. In A. Norris (Ed.) Deafness Annual. Washington, D. C.: Social and Rehabilitation Services, 1973, 115-129.

98. Moores, D. Early childhood special education for the hearing handicapped. In H. Spicker & N. Anastasiow (Eds.) Early Childhood Special Education. Minneapolis: University of Minnesota Press. (In press)

99. Moores, D. Non-vocal systems of verbal behavior. In R. Schiefelbusch and L. Lloyd (Eds.) Language Perspectives - Acquisition, Retardation, and Instrumentation. Baltimore, Maryland: University Park Press, 1974. (In press)

100. Moores, D., McIntyre, C. and Weiss, K. Gestures, signs and speech in the evaluation of programs for hearing impaired children. Sign Language Studies, 1973, 2, 9-28.

101. Moores, D., Weiss, K., and Goodwin, M. Receptive abilities of deaf children across five modes of communication. Exceptional Children, 1973, 40, (1), 22-28.

102. Nadelman, L. & Wozniak, R. Introduction to Child Psychology: A Laboratory Approach. New York: Harper Row, 1972.(In press)

103. Riegel, R. H., Taylor, A. M., & Danner, F. W. Teaching potentially handicapped children to classify and remember. Exceptional Children. (In press)

104. Roberts, G. C. & Black, K. N. The effect of naming and object permanence on toy preferences. Child Development, 1972, 43, 858-868.

105. Rubin, R. A., Krus, P., & Balow, B. Factors in special class placement, Exceptional Children, 1973, 39, 525-532.

106. Rubin, R. A., Rosenblatt, C., & Balow, B. Psychological and educational sequelae of prematurity; Pediatrics (In Press).

107. Rubin, R. A. & Krus, P. Validation of a school behavior rating scale. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, February, 1973.

108. Rynders, J. and Turnure, J. Effectiveness of manual guidance, modeling and trial and error learning procedures on the acquisition of new behaviors. Merrill Palmer Quarterly, 1973, 19, 49-65.

109. Samuels, S. Effect of distinctive feature training on paired-associate learning. Journal of Educational Psychology. (In press)

110. Samuels, S. Visual recognition memory, paired-associate learning and reading achievement: Journal of Educational Psychology. (In press)

111. Samuels, S. & Chen, C. Comparison of word recognition strategies of adults and children. Twentieth Yearbook of National Reading Conference. (In press)

112. Samuels, S. & Pearson, D. Book review: Smith, Frank, Understanding reading: A psycholinguistic analysis of reading and learning to read. American Educational Research Journal. (In press)

113. Samuels, S. & Olson, Relationship between age and accuracy of foreign language pronunciation. Journal of Educational Research. (In press)

114. Samuels, S. & Turnure, J. Role of attention in early reading. Journal of Educational Psychology. (In press)

115. Samuels, S., Terry, P., & Biesbrock, P. Effect of pictures on children's attitude about reading. Journal of Educational Research. (In press)

116. Taylor, A. M., Josberger, M., & Whitely, S. E. Elaboration instruction and verbalization as factors facilitating retarded children's recall. Journal of Educational Psychology, 1973, 64, 341-346.

117. Templin, M. Developmental aspects of articulation. Chapter III, pp. 51-82 in Wolfe, W. Dean and Goulding, Daniel J. (Editors) Articulation and Learning. Springfield, Illinois: Charles C. Thomas, 1973.

118. Turnure, J. Outerdirectedness in EMR boys and girls. American Journal of Mental Deficiency, 1973. (In press)

119. Turnure, J. & Samuels, S. Attention and reading achievement in first grade boys and girls. Journal of Educational Psychology, 1973. (In press)

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121. Turnure, J. & Thurlow, M. Relational and structural components in verbal elaboration with young children. Proceedings of the 81st Annual Convention of APA, 1973. (In press)

122. Turnure, J. & Thurlow, M. Verbal elaboration and the promotion of transfer of training in educable mentally retarded children. Journal of Experimental Child Psychology, 1973, 15, 137-148.

123. Turnure, J., Larsen, S., & Thurlow, M. Effects of brain-injury and other subject characteristics on paired-associate performance under paragraph elaboration. American Journal of Mental Deficiency, 1973. (In press)

124. Turnure, J., Buium, N., Rynders, J., & Wolf, J. The early maternal linguistic environment of normal and non-normal language learning children. Proceedings of the 81st Annual Convention of the American Psychological Association, 1973. (In press)

125. Whitely, S. E. & Taylor, A. M. Overt verbalization and the continued production of effective elaborations by EMR children. American Journal of Mental Deficiency. (In press)

126. Woodcock, R. W. Woodcock Reading Mastery Tests. Circle Pines, Minnesota: American Guidance Service, 1973. (In press)

127. Wozniak, R. H. Intelligence, testing, & the Soviet view of man. Human Development, 1973. (In press)

128. Wozniak, R. H. Structuralism and materialistic dialectics. In K. Riegel (Ed.) Historical and Developmental Issues in Structuralism. Basel: S. Karger. (In press)

129. Wozniak, R. H. A suggestion concerning structural changes in psychological functioning with age. Human Development. (In press)

Colloquia and Papers Presented

130. Bart, W. An ordering-theoretic analysis of a propositional logic game. Paper read at the American Educational Research Association meeting, New Orleans, February, 1973. (with Peter W. Airasian).

131. Bart, W. The process of cognitive structure complexification. Paper read at the Fourth Annual Meeting on Structural Learning, Philadelphia, June, 1973.

132. Bart, W. An alternative algebraic representation of operational thought. Paper read at the Second Prague Conference on Psychology of Human Learning and Problem Solving, Prague, Czechoslovakia, July, 1973.

133. Best, B. Classificatory development in deaf children: Research on language and cognitive development. Paper presented at the Biennial meeting of the Society for Research in Child Development, Philadelphia, March, 1973.

134. Charlesworth, W. Ethology's contribution to a framework for relevant research. Paper presented at national symposium, The value of relevant research: Selling the unwashed to the pure, American Psychological Association (APA), Montreal, August, 1973.

135. Egeland, B., Graggins, J. and Powalsky, J. Teaching children to discriminate letters of the alphabet through errorless discrimination training. Bienniel meeting, Society for Research in Child Development, Philadelphia, March, 1973.

136. Horrobin, M. A case study of research and development relevancy. Paper presented at national symposium, The value of relevant research: Selling the unwashed to the pure, American Psychological Association, Montreal, August, 1973 (with J. Rynders).

137. Horrobin, M. Communicating social information to adult mentally retarded individuals through the use of printed materials. Paper presented at the national convention of the American Association for Health, Physical Education and Recreation Montreal, April, 1973 (with J. Rynders).

138. Moores, D. Current research in education of the deaf - implications and applications. California State University, Fresno, December, 1972.

139. Moores, D. The effectiveness of total communication. California State University, Fresno, December, 1972.

140. Moores, D. Issues in evaluation of intervention programs. Deafness Research Center, New York University, May, 1973.

141. Moores, D. Participant, group leader, editor, Workshop on preparation of teachers to work with children from Spanish speaking homes. San Antonio, Texas, November, 1972.

142. Moores, D. Faculty coordinator, University of Minnesota symposium on families and handicapped children. Minneapolis, May, 1973.

143. Moores, D. Panel moderator, Deaf adults and adjustment to the hearing world. Minnesota Association of Parents of Hearing Impaired Children Annual Meeting, St. Paul, May, 1973.

144. Moores, D. Observer, Early childhood education roundtable discussion, Minneapolis, May, 1973.

145. Moores, D. Participant, NICHD growth and development conference, Language intervention with the mentally retarded. Wisconsin Dells, Wisconsin. June, 1973.

146. Moores, D. Coordinator, BEH/SRS conference, Evaluation of post secondary programs for the deaf, Brainerd Minnesota. July, 1973.

147. Moores, D. The research to relevancy continuum. Paper presented at national symposium, The value of relevant research: Selling the unwashed to the pure, American Psychological Association (APA), Montreal, August, 1973.

148. Riegel, R. H. & Taylor, A. M. A comparison of conceptual strategies for grouping and remembering employed by educable mentally retarded and non-retarded children. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, February, 1973.

149. Rynders, J. E. A case study of RD&D relevancy. Paper presented at national symposium, The value of relevant research: Selling the unwashed to the pure, American Psychological Association (APA), Montreal, August, 1973.

150. Samuels, S. and Archwamety, T. A mastery based experimental program for teaching mental retardates word recognition skills. Paper read at the meeting of the American Educational Research Association, New Orleans, February, 1973.

151. Samuels, S. Methodological problems in doing research with retardates. Paper presented at the annual meeting of the American Psychological Association, Chicago, August, 1972.

152. Samuels, S. Role of attention in reading achievement. Paper read at the meeting of the American Educational Research Association, New Orleans, February, 1973.(with J. Turnure).

153. Samuels, S. Teaching educational psychology. Paper read at the meeting of the American Educational Research Association, New Orleans, 1973.

154. Samuels, S. Preconvention institute organizer: Research on reading acquisition: with an emphasis on deprived populations. American Educational Research Association meeting, New Orleans, February, 1973.

155. Samuels, S. How can psychologists be relevant? Paper presented at national symposium, The value of relevant research: Selling the unwashed to the pure, American Psychological Association, Montreal, August, 1973.

156. Taylor, A. M., Thurlow, M. L., & Turnure, J. E. A comparison of three strategy training approaches for teaching vocabulary concepts to retarded children. Paper presented at American Educational Research Association, New Orleans, February, 1973.

157. Turnure, J. Discussant. Research approaches for studying deviant psychological functioning. Annual meeting of the American Psychological Association, Honolulu, September, 1972.

158. Turnure, J. Relevancy and rejuvenation. Paper presented at national symposium, The value of relevant research: Selling the unwashed to the pure, American Psychological Association, Montreal, August, 1973.

159. Turnure, J., Taylor, A., & Thurlow, M. Attention and reading achievement in first grade boys and girls. Paper read at American Educational Research Association Convention, New Orleans, February, 1973.

160. Whitely, S. E., & Taylor, A. M. Imagery and verbal elaboration in learning multiple associates. Paper presented at American Psychological Association, Montreal, August, 1973.

161. Wozniak, R. H. Colloquium: Development of certain mathematical concepts in children. Stillwater Public Schools, December, 1972.

162. Wozniak, R. H. Speech-for-self as multiple reafferent human action system. Paper presented at the Biennial meeting of the Society for Research in Child Development, Philadelphia, March, 1973.

163. Wozniak, R. H. Verbal self-regulation of certain cognitive operations: The nature and effects of speech as a multiply reafferent human action. Paper read at the annual meeting of the American Speech and Hearing Association, San Francisco, November, 1972.

164. Wozniak, R. H. Structuralism, dialectical materialism, and cognitive development theory: an examination of certain basic assumptions of Piagetian theory. Paper presented at the Biennial meeting of the Society for Research in Child Development, Philadelphia, March, 1973.

165. Wozniak, R. H., Herrmann, R., & Riquet, C. Natural competence vs. trained performance in children's proportionality judgements; an explication. Paper presented at the Biennial meeting of the Society for Research in Child Development, Philadelphia, March, 1973.

166. Wozniak, R. H. In-context research on children's learning as a basic science prophylactic. Paper presented at national symposium, The value of relevant research: Selling the unwashed to the pure, American Psychological Association, August, 1973.

Other Dissemination Activities

167. Egeland, B. Teaching children to discriminate letters of the alphabet through errorless discrimination training. Final report of the U.S. Office of Education grant #OEG-2-2B003, June, 1973.

168. Moores, D. The role of the University of Minnesota RD&D Center in Education of Handicapped Children. Presented to East Metropolitan Council on Exceptional Children, St. Paul, October, 1972.

169. Moores, D. Panel chairman, Parent-child communication. Crippled Children's Services Institute on Deafness. Brainerd, Minn., October, 1972.

170. Moores, D. Participant, Planning Group, National Advisory Council on Education of the Deaf Research Conference, Champaign, Illinois, October, 1972.

171. Moores, D. Symposium chairman, The role of the University of Minnesota Research, Development and Demonstration Center in Education of Handicapped Children. Minnesota Administrators of Special Education (MASE) semi-annual meeting. Hopkins, Minnesota, April, 1973.

172. Riegel, R. H. Classroom applications of research on the development of classification behavior in young handicapped children. Inservice presentation, Minneapolis, Minnesota, July, 1973.

173. Riegel, R. H. & Taylor, A. M. Teaching basic reading, mathematics and vocabulary to handicapped, disadvantaged pupils through the use of learning strategies. Final report of U.S.O.E. Title I summer program. St. Paul, Minnesota, August, 1972.

174. Rubin, R. A. Preschool application of the Metropolitan Readiness Tests: Reliability, validity and preschool norms. USOE, BEH, Project #6-1176, Interim Report No. 13, Department of Special Education, University of Minnesota, January, 1973.

175. Rynders, J. Early education strategies for retarded infants and preschool children. University of Minnesota, Continuing Education and Extension. A conference on education of the handicapped. St. Paul, Minn., April, 1973.

176. Rynders, J. An early education program for severely retarded infants and preschool children. Presentation sponsored by RD&D Center for special education administrators, Hopkins, Minnesota, April, 1973.

Presentation of RD&D Center activities to the public has taken place this last year on three levels. Center principal investigators have shared the results of their work with classroom teachers, special education administrators, and research colleagues. The following is a summary of these presentations.

A. Language Acquisition for Classroom Teachers (SpEd 5-140)

Taught by Center Director Donald F. Moores, the twelve week course offered an exploration of current research and theory in language acquisition of children with special emphasis on practical application to the education of linguistically handicapped children. This class was taught in a public school and attended by 95 special education teachers. The teachers were also acquainted with current Center research and development activities through presentations by principal investigators S. Jay Samuels, James Turnure, Martha Thurlow, Hunt Riegel, John Rynders, Robert Wozniak, Arthur Taylor, and Donald Moores.

B. MASE (Minnesota Association of Special Educators) Symposium.

Held in April, 1973, the one-day symposium was designed to strengthen ties between Center researchers and state administrators of special education, to provide administrators with a background on the scope of Center activities, and to receive feedback on specific Center projects. Selected Center projects were illustrated by slide and display presentations. Center investigators making formal presentations were S. Jay Samuels, John Rynders, Arthur Taylor, and Donald Moores.

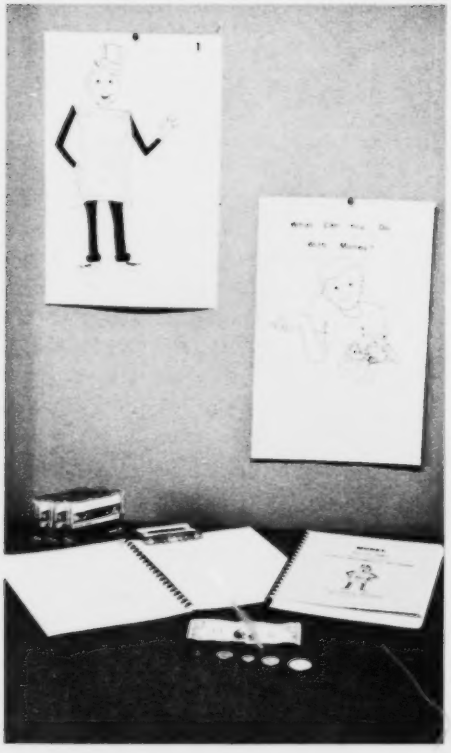
C. American Psychological Association Symposium. The Value of Relevant Research: Selling the Unwashed to the Pure. (Montreal, Canada).

This symposium was organized by Center principal investigator James Turnure and explored approaches to conducting educationally relevant research. The symposium covered a variety of topics including the move from the laboratory to the classroom and the constraints placed on researchers when research is conducted in different environments, relations with public schools, reward systems in universities which have not encouraged applied research, and the relationship between applied and theoretical research. The following is a list of participants and their topics:

1) William Charlesworth. Ethology's contribution to a framework for relevant research.
2) Donald F. Moores. The research to relevancy continuum.
3) John E. Rynders. A case study of R&D relevancy.
4) S. Jay Samuels. How can psychologists be relevant?
5) James E. Turnure. Relevancy and rejuvenation.
6) Robert H. Wozniak. In-context research on children's learning as a basic science prophylactic.

The papers will be published in a Center technical report in November, 1973 and will be available upon request.

Evaluation of Preschool Programs for the Deaf, Moores



Vocabulary Development Project, Taylor

Deaf Children of Deaf Parents Project, Moores, Best & Hoffmeister

VII. Training

Students are involved in the Center in a variety of capacities. During 1972-73 a total of 70 students were employed by the Center; of the students, twenty-nine were undergraduate research assistants, twenty-five were graduate research assistants, nine were research fellows, one was a research associate, two were psychometric assistants, two were clerks, one was a research specialist and one was an interpreter. In addition, several graduate students in Special Education were participants in Center research projects as part of their graduate training programs. Several masters theses and doctoral dissertations related to the Center's work have been completed or are being written under the direction of Center personnel.

BACHELOR SUMMA PAPERS, MASTERS THESES, AND DOCTORAL DISSERTATIONS

Ph.D. Dissertations

Archwamety, T. A Mastery Based Experimental Program for Teaching Mentally Retarded Children Word Recognition and Reading Comprehensive Skills Through Use of Hypothesis/Test Procedures. 1973. Advisor: S. Jay Samuels.

Kreutzer, M.A. Help-Seeking Behavior in Pre-School High-Risk Mentally Retarded Children. Institute of Child Development, 1973. Advisor: William Charlesworth.

Markwalder, W. A Diagnosis of Susceptibility to Reasoning Level Change. Department of Special Education, 1973. Advisor: James Turnure.

Riegel, R. H. The Effects of Organizational Versus Content Training on the Learning and Retention Abilities of Young Handicapped Children, October, 1972. Advisor: Frank Wood.

Masters Theses

Baxter, S. Development of Rebus Vocabulary Skills in Down's Syndrome Children. 1972. Advisor: John Rynders.

Dell, V. Stimulating Early Reading Behaviors in Preschool Down's Syndrome (Mongoloid) Children Using the Typewriter as a Motivational Tool. 1972. Advisor: John Rynders.

Fischer, P. An Investigation of Verbal and Nonverbal Auditory Discrimination Learning by Kindergarten Children who were Poor Discriminators. 1972. Advisor: Elizabeth Gallistel.

Gifford, I. Use of Visual and Auditory Aptitude Tests to Predict Success in First Grade Reading taught by a Phonic Approach. 1972. Advisor: Elizabeth Gallistel.

Hayman, M. The Relationship of Visual and Auditory Aptitudes in the Acquisition of Beginning Reading Skills Among Low Readers Using Whole Word Linguistic Instruction. 1972. Advisor: Elizabeth Gallistel.

Hibbs, B. The Relationship of Visual and Auditory Aptitudes of the First Grade Low Readers Under Sight Word and Phonic Instruction. 1972. Advisor: Elizabeth Gallistel.

Horning, S. An Auditory Training Program for Preschool Hearing Impaired Children. 1973. Advisor: Donald F. Moores.

McCracken, C. The Contribution of Research in Auditory and Visual Perception to the Solution of Early Reading Failure. 1972. Advisor: Elizabeth Gallistel.

Satullo, M. Art as a Means of Promoting Communication Skills in Preschool Trainable Mentally Retarded Children. 1973. Advisor: John Rynders.

Taxis, W. The Evaluation and Educational Significance of Training to Develop Imagery and Verbal Elaboration. 1973. Advisor: Arthur M. Taylor.

Trautz, S. C. Effective Use of Elaboration Strategies by Transition Class Children and Resulting Educational Implications. 1972. Advisor: Arthur M. Taylor.

Wolf, J. Measurement of Receptive Language Ability in Down's Syndrome (Mongoloid) Children Through the Use of a Visual-Motor Assessment Device. 1973. Advisor: John Rynders.

Bachelor Summa Papers

Donnelly, L. Developmental Trends in Children's Conceptual Strategies for Grouping and Remembering. 1973. Advisors: Hunt Riegel and Robert Wozniak.

Nuechterlein, M. A Verbal Self-Instruction Curriculum for Impulsive Poor Readers. 1973. Advisor: Robert Wozniak.

Available Upon Request

Copies of any or all Minnesota Research, Development and Demonstration Center publications are available upon request at no cost. If you wish material to be mailed, please indicate the number of copies desired. Up to 5 copies of any report may be requested. Requests should be directed to:

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University of Minnesota
Minneapolis, Minnesota 55455

No. of Copies	Reports
_____	W. Bart. The pseudo-problem of IQ. Occasional Paper #21. October 1973.
_____	J. Turnure & M. Thurlow. Verbal elaboration and the enhancement of language abilities in the mentally retarded: The role of interrogative sentence-forms*. Occasional Paper #20. October 1973.
_____	P. Dahl, S. Samuels & T. Archwamety. A mastery based experimental program for teaching poor readers high speed word recognition skills. Research Report #55. September 1973.
_____	R. Riegel, F. Danner & L. Donnelly. Development trends in the generation and utilization of associative relations for recall by EMR and non-retarded children: The SORTS test. Research Report #54. August 1973.
_____	R. Hoffmeister & D. Moores. The acquisition of specific reference in the linguistic system of a deaf child of deaf parents. Research Report #53. August 1973.
_____	W. Bart & M. Smith. An interpretive framework of cognitive structures. Occasional Paper #19. June 1973.
_____	C. Clark & J. Greco. MELDS (Minnesota Early Language Development Sequence) Glossary of Rebuses and Signs. Occasional Paper #18. June 1973.
_____	J. Turnure. Interrelations of orienting responses, response latency and stimulus choice in children's learning. Research Report #52. May 1973.
_____	S. Samuels & P. Dahl. Automaticity, reading and mental retardation. Occasional Paper #17. May 1973.
_____	S. Samuels & P. Dahl. Relationships among IQ, learning ability, and reading achievement. Occasional Paper #16. May 1973.
_____	N. Buium & J. Rynders. The early maternal linguistic environment of normal and Down's Syndrome (Mongoloid) language learning children. Research Report #51. May 1973.
_____	T. Archwamety & S. Samuels. A mastery based experimental program for teaching mentally retarded children word recognition and reading comprehension skills through use of hypothesis/test procedures. Research Report #50. May 1973.
_____	W. Bart. The process of cognitive structure complexification. Research Report #49. April 1973.
_____	B. Best. Classificatory development in deaf children: Research on language and cognitive development. Occasional Paper #15. April 1973.
_____	R. Riegel, A. Taylor, & F. Danner. The effects of training in the use of a grouping strategy on the learning and memory capabilities of young EMR children. Research Report #48. April 1973.
_____	J. Turnure & M. Thurlow. The latency of forward and backward association responses in an elaboration task. Research Report #47. March 1973.
_____	R. Riegel & A. Taylor. Strategies in the classroom: A summer remedial program for young handicapped children. Occasional Paper #14. March 1973.
_____	D. Moores. Early childhood special education for the hearing impaired. Occasional Paper #13. February 1973.
_____	R. Riegel & A. Taylor. A comparison of conceptual strategies for grouping and remembering employed by educable mentally retarded and non-retarded children. Research Report #46. February 1973.
_____	J. Rynders. Two basic considerations in utilizing mothers as tutors of their very young retarded or potentially retarded children. Occasional Paper #12. January 1973.
_____	R. Bruininks, J. Rynders & J. Gross. Social acceptance of mildly retarded pupils in resource rooms and regular classes. Research Report #45. January 1973.
_____	J. Turnure & M. Thurlow. The effects of interrogative elaborations on the learning of normal and EMR children. Research Report #44. January 1973. (Proceedings of the International Association for the Scientific Study of Mental Deficiency, in press).
_____	J. Turnure & S. Samuels. Attention and reading achievement in first grade boys and girls. Research Report #43. November 1972. (Journal of Educational Psychology, in press).
_____	R. Riegel, A. Taylor, S. Clarren, & F. Danner. Training educationally handicapped children to use associative grouping strategies for the organization and recall of categorizable materials. Research Report #42. November 1972.
_____	R. Riegel, F. Danner, & A. Taylor. Steps in sequence: Training educationally handicapped children to use strategies for learning. Development Report #2. November 1972.
_____	A. Taylor, M. Thurlow, & J. Turnure. The teacher's introduction to: The math vocabulary program. Development Report #1. March 1973.
_____	J. Turnure & M. Thurlow. The effects of structural variations in elaboration on learning by normal and EMR children. Research Report #41. September 1972.
_____	A. Taylor & N. Bender. Variations of strategy training and the recognition memory of EMR children. Research Report #40. September 1972. (American Educational Research Journal, in press).

D. Moores, C. McIntyre, & K. Weiss. Evaluation of Programs for Hearing Impaired Children: Report of 1971-72. Research Report #39. September 1972.

R. Rubin. Follow-up of applicants for admission to graduate programs in special education. Occasional Paper #11. July 1972.

D. F. Moores. Communication - Some unanswered questions and some unquestioned answers. Occasional Paper #10. July 1972.

A. M. Taylor & S. E. Whitely. Overt verbalization and the continued production of effective elaborations by EMR children. Research Report #38. June 1972.

R. H. Riegel. Measuring educationally handicapped children's organizational strategies by sampling overt groupings. Research Report #37. May 1972.

E. Gallistel, M. Boyle, L. Curran, & M. Hawthorne. The relation of visual and auditory aptitudes to first grade low readers' achievement under sight-word and systematic phonic instruction. (Research Report #36. May 1972.)

E. Gallistel & P. Fischer. Decoding skills acquired by low readers taught in regular classrooms using clinical techniques. Research Report #35. May 1972.

J. Turnure & M. Thurlow. Verbal elaboration in children: Variations in procedures and design. Research Report #34. March 1972.

D. Krus & W. Bart. An ordering-theoretic method of multidimensional scaling of items. Research Report #33. March 1972.

J. Turnure & S. Larsen. Effects of various instruction and reinforcement conditions on the learning of a three-position oddity problem by nursery school children. Research Report #32. March 1972.

J. Turnure & S. Larsen. Outerdirectedness in mentally retarded children as a function of sex of experimenter and sex of subject. Research Report #31. March, 1972.

J. Rynders & J. M. Horrobin. A mobile unit for delivering educational services to Down's syndrome (Mongoloid) infants. Research Report #30. January, 1972. (Presented at Council for Exceptional Children, Special National Conference, Memphis, December, 1971).

F. Danner & A. Taylor. Pictures and relational imagery training in children's learning. Research Report #29. December 1971.

J. Turnure & M. Thurlow. Verbal elaboration phenomena in nursery school children. Research Report #28. December 1971.

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S. Samuels. Success and failure in learning to read: A critique of the research. Occasional Paper #9. November 1971. (In M. Kling, the Literature of Research in Reading with Emphasis on Modes, Rutgers University, 1971).

S. Samuels. Attention and visual memory in reading acquisition. Research Report #26. November 1971.

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A. Taylor, M. Josberger, & J. Knowlton. Mental elaboration and learning in retarded children. Research Report #22. September 1971. (Mental Elaboration and Learning in EMR Children. American Journal of Mental Deficiency, 1972 in press).

J. Turnure & S. Larsen. Outerdirectedness in Educable Mentally Retarded Boys and Girls. Research Report #21. September, 1971.

R. Bruininks, T. Glaman, & C. Clark. Prevalence of learning disabilities: Findings, issues, and recommendations. Research Report #20. June, 1971. (Presented at Council for Exceptional Children Convention, Miami Beach, April, 1971.)

M. Thurlow & J. Turnure. Mental elaboration and the extension of mediational research: List length of verbal phenomena in the mentally retarded. Research Report #19. June 1971. Journal of Experimental Child Psychology, in press.

G. Siegel. Three approaches to speech retardation. Occasional Paper #8. May 1971.

D. Moores. An investigation of the psycholinguistic functioning of deaf adolescents. Research Report #18. May 1971. (Exceptional Children, May, 1970, 36, 645-652).

D. Moores. Recent research on manual communication. Occasional Paper #7. April 1971 (Keynote Address, Division of Communication Disorders, Council for Exceptional Children Annual Convention, Miami Beach, April, 1971.

J. Turnure, S. Larsen, & M. Thurlow. Two studies on verbal elaboration in special populations I. The effects of brain injury II. Evidence of transfer of training. Research Report #17. April 1971.

R. Bruininks & J. Rynders. Alternatives to special class placement for educable mentally retarded children. Occasional Paper #6. March 1971. (Focus on Exceptional Children, 1971, 3, 1-12).

D. Moores. Neo-oralism and the education of the deaf in the Soviet Union. Occasional Paper #5. February 1971. (Exceptional Children, January, 1972, 38, 377-384).

D. Feldman, B. Marrinan, & S. Hartfeldt. Unusualness, appropriateness, transformation and condensation as criteria for creativity. Research Report #16. February, 1971. (American Educational Research Association Annual Conference, New York, February 1971).

P. Broen & G. Siegel. Variations in normal speech disfluencies. Research Report #15. January, 1971 (Language & Speech, in press).

D. Feldman. Map understanding as a possible crystallizer of cognitive structures. Occasional Paper #4. January 1971. (American Educational Research Journal, 1971, 3, 484-502).

J. Rynders. Industrial arts for elementary mentally retarded children: An attempt to redefine and clarify goals. Occasional Paper #3. January, 1971.

D. Moores. Education of the deaf in the United States. Occasional Paper #2. November, 1970. (Moscow Institute of Defectology, 1971, Published in Russian).

R. Bruininks & C. Clark. Auditory and visual learning in first-, third-, and fifth-grade children. Research Report #14. November 1970.

R. Bruininks & C. Clark. Auditory and visual learning in first grade educable mentally retarded and normal children. Research Report #13. November 1970.

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R. Bruininks & W. Lucker. Change and stability in correlations between intelligence and reading test scores among disadvantaged children. Research Report #11. October 1970. (Journal of Reading Behavior, 1970, 2, 295-305).

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D. Feldman & J. Bratton. On the relativity of giftedness: An empirical study. Research Report #8. August, 1970. (American Educational Research Annual Conference, New York, February, 1971).

J. Turnure, M. Thurlow, & S. Larsen. Syntactic elaboration in the learning & reversal of paired-associates by young children. Research Report #7. January, 1971.

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J. Turnure & M. Walsh. The effects of varied levels of verbal mediation on the learning & reversal of paired-associates by educable mentally retarded children. Research Report #5. June 1970. (Study I: American Journal of Mental Deficiency, 1971, 76, 60-67. Study II: American Journal of Mental Deficiency, 1971, 76, 306-312.)

J. Turnure, J. Rynders, & N. Jones. Effectiveness of manual guidance, modeling & trial & error learning for inducting instrumental behavior in institutionalized retardates. Research Report #4. June, 1970. (Merrill-Palmer Quarterly, in press.)

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